排除SD-WAN動態按需隧道故障

目錄

簡介

本文檔介紹在配置或檢查與SD-WAN動態按需隧道相關問題時可以使用的故障排除命令。

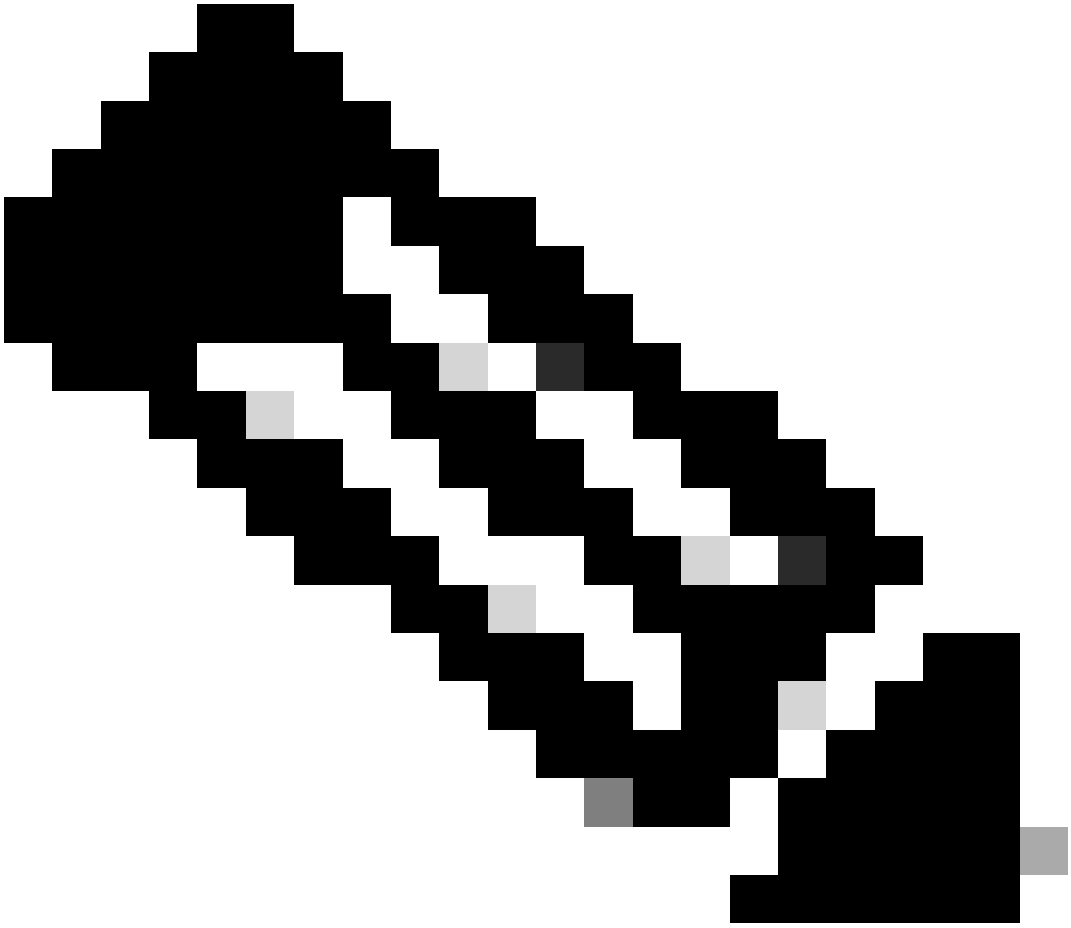
必備條件

採用元件

本檔案是根據以下組態參考、軟體和硬體版本撰寫的：

- vManage 20.9.3版
- 邊緣路由器ISR4K版本17.9.3
- 所有裝置都配置為根據官方文檔建立動態按需隧道

本文中的資訊是根據特定實驗室環境內的裝置所建立。文中使用到的所有裝置皆從已清除（預設）的組態來啟動。如果您的網路運作中，請確保您瞭解任何指令可能造成的影響。



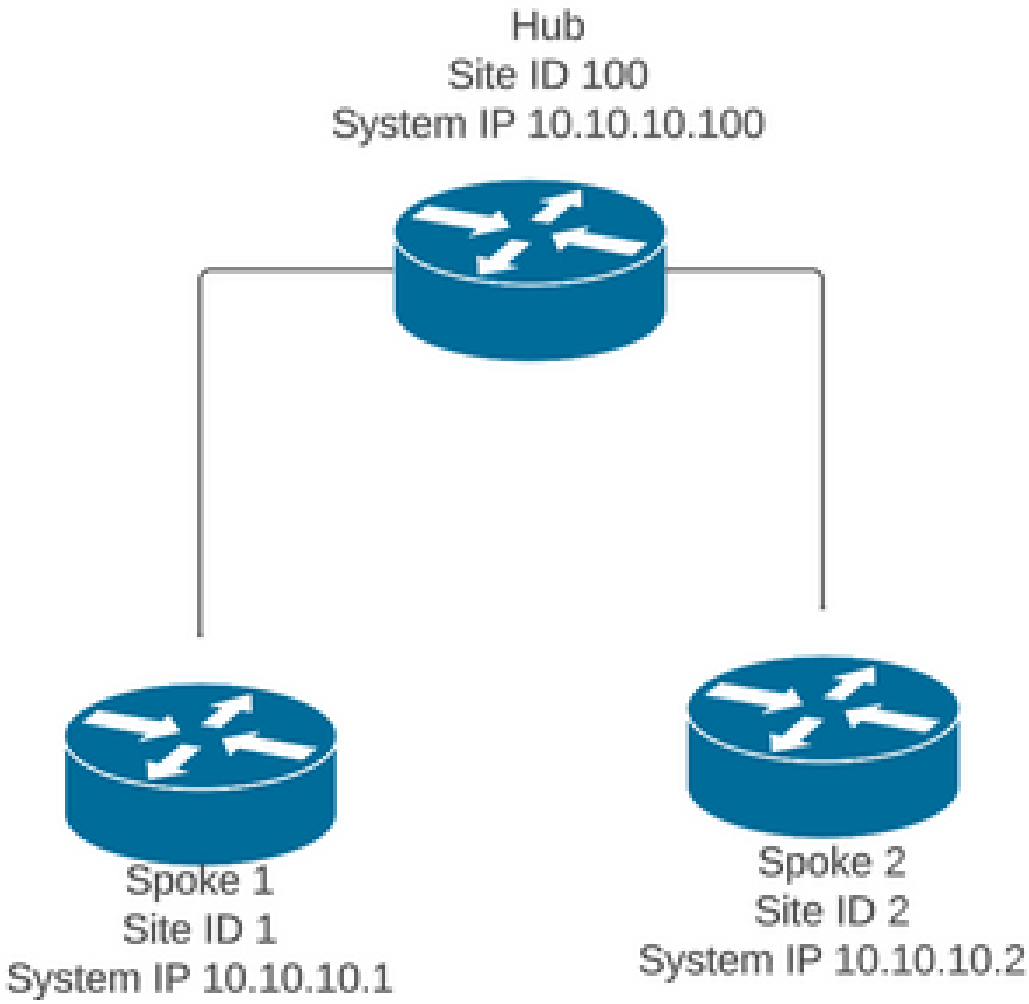
註：有關動態按需隧道配置，請參閱本文檔。

背景資訊

Cisco SD-WAN支援任意兩個Cisco SD-WAN分支裝置之間的動態按需隧道。僅當兩台裝置之間存在流量最佳化頻寬使用和裝置效能時，才會觸發這些隧道的設定。

工作案例

使用的拓撲



在正常運行方案中，按需隧道觸發條件包括：

- 無法建立分支之間的BFD會話，在show sdwan bfd sessions中甚至顯示為關閉
- 在終端之間傳送相關流量時，可能會觸發BFD會話
- 必須設定和確認基本動態按需隧道配置

觸發程式隨選通道啟用

- 最初，分支之間的BFD會話未啟動，只有從分支到集線器的會話處於啟動狀態，並且按需系統狀態在分支和OMP表中都顯示為非活動狀態，從集線器的備份路由設定為C、I、R，而從Spoke 2的路由設定為I、U、IA

<#root>

Spoke 1#show sdwan bfd sessions

```
                          SOURCE TLOC REMOTE TLOC             DST PUBLIC    DST PUBLIC         DETECT
SYSTEM IP     SITE ID STATE COLOR       COLOR       SOURCE IP   IP            PORT         ENCAP MULTIP
--------------------------------------------------------------------------------------------------------
10.10.10.100  100     up    blue        blue        10.10.10.1  10.100.100.1  12366        ipsec     7
```

Spoke 1#show sdwan system on-demand remote-system

```
SITE-ID SYSTEM-IP

ON-DEMAND STATUS

   IDLE-TIMEOUT-EXPIRY(sec)
------------------------------------------------------------------------------
2       10.10.10.2

 yes       inactive

  -
```

Spoke 1#show sdwan omp routes vpn 10 10.2.2.2/32

```
Generating output, this might take time, please wait ...
Code:
C -> chosen
I -> installed
Red -> redistributed
Rej -> rejected
L -> looped
R -> resolved
S -> stale
Ext -> extranet
Inv -> invalid
Stg -> staged
IA -> On-demand inactive
U -> TLOC unresolved
BR-R -> border-router reoriginated
TGW-R -> transport-gateway reoriginated
```

TENANT	VPN	PREFIX	FROM PEER	PATH ID	LABEL	STATUS	ATTRIBUTE TYPE	TLOC IP	COLOR	ENCAP	PRE
0	**10**	**10.2.2.2/32**	**192.168.0.1**	**61**	**1005**	**C,I,R**	**installed**	**10.10.10.100**	**blue**	**ipsec**	**-**
			192.168.0.1	62	1003	I,U,IA	installed	10.10.10.2	default	ipsec	-
			192.168.0.1	64	1005	C,R	installed	10.10.10.100	blue	ipsec	-
			192.168.0.1	65	1003	I,U,IA	installed	10.10.10.2	private1	ipsec	-
			192.168.0.1	67	1005	Inv,U	installed	10.10.10.100	blue	ipsec	-
			192.168.0.1	68	1003	I,U,IA	installed	10.10.10.2	private2	ipsec	-
			192.168.0.2	71	1005	C,R	installed	10.10.10.100	blue	ipsec	-
			192.168.0.2	72	1003	U,IA	installed	10.10.10.2	default	ipsec	-
			192.168.0.2	74	1005	C,R	installed	10.10.10.100	blue	ipsec	-
			192.168.0.2	75	1003	U,IA	installed	10.10.10.2	private1	ipsec	-
			192.168.0.2	77	1005	Inv,U	installed	10.10.10.100	blue	ipsec	-
			192.168.0.2	78	1003	U,IA	installed	10.10.10.2	private2	ipsec	-

Spoke 2#show sdwan bfd sessions

SYSTEM IP	SITE ID	STATE	SOURCE TLOC COLOR	REMOTE TLOC COLOR	SOURCE IP	DST PUBLIC IP	DST PUBLIC PORT	ENCAP	DETE MULTI
10.10.10.100	100	up	blue	blue	10.10.10.2	10.100.100.1	12366	ipsec	7

Spoke 2#show sdwan system on-demand remote-system

```
SITE-ID SYSTEM-IP
ON-DEMAND STATUS
 IDLE-TIMEOUT-EXPIRY(sec)
------------------------------------------------------------------------------
1       10.10.10.1
 yes       inactive
 -
```

- 要觸發按需隧道啟用，需要關注流量。在本示例中，使用ICMP流量，在傳送流量後，按需遠端系統的狀態從兩端的「非活動」狀態更改為「活動」狀態，並且OMP表中的目標字首從「中心」的C、I、R狀態更改為「分支2」的C、I、R狀態

<#root>

```
Spoke 1#ping vrf 10 10.2.2.2 re 20

Type escape sequence to abort.
Sending 20, 100-byte ICMP Echos to 10.2.2.2, timeout is 2 seconds:
!!!!!!!!!!!!!!!!!!!!
Success rate is 100 percent (20/20), round-trip min/avg/max = 1/3/31 ms

Spoke 1#show sdwan system on-demand remote-system

SITE-ID SYSTEM-IP
ON-DEMAND   STATUS
 IDLE-TIMEOUT-EXPIRY(sec)
------------------------------------------------------------------------------
2       10.10.10.2
 yes         active
 56

Spoke 1#show sdwan bfd sessions

                            SOURCE TLOC REMOTE TLOC            DST PUBLIC   DST PUBLIC       DETECT TX
SYSTEM IP     SITE ID STATE COLOR       COLOR     SOURCE IP    IP           PORT       ENCAP MULTIPLIER
-------------------------------------------------------------------------------------------------------
10.10.10.100   100     up blue          blue      10.10.10.1   10.100.100.1 12366      ipsec    7
10.10.10.2     2       up default       default   10.10.10.1   10.12.12.2   12366      ipsec    7

10.10.10.2     2       up blue          blue      10.10.10.1   10.12.12.2   12366      ipsec    7

Spoke 1#
```

show sdwan omp routes vpn 10 10.2.2.2/32

```
Generating output, this might take time, please wait ...
Code:
C -> chosen
I -> installed
Red -> redistributed
Rej -> rejected
L -> looped
R -> resolved
S -> stale
Ext -> extranet
Inv -> invalid
Stg -> staged
IA -> On-demand inactive
U -> TLOC unresolved
BR-R -> border-router reoriginated
TGW-R -> transport-gateway reoriginated
```

		PATH			ATTRIBUTE			
TENANT	VPN PREFIX	FROM PEER	ID	LABEL	STATUS	TYPE	TLOC IP	COLOR	ENCAP P
0	10 10.2.2.2/32	192.168.0.1	61	1005	R	installed	10.10.10.100	blue	ipsec
		192.168.0.1	**62**	**1003**	**C,I,R**	**installed**	**10.10.10.2**	**default**	**ipsec**
		192.168.0.1	64	1005	R	installed	10.10.10.100	blue	ipsec
		192.168.0.1	**65**	**1003**	**C,I,R**	**installed**	**10.10.10.2**	**private1**	**ipsec**
		192.168.0.1	67	1005	Inv,U	installed	10.10.10.100	blue	ipsec
		192.168.0.1	**68**	**1003**	**C,I,R**	**installed**	**10.10.10.2**	**private2**	**ipsec**
		192.168.0.2	71	1005	R	installed	10.10.10.100	blue	ipsec
		192.168.0.2	72	1003	C,R	installed	10.10.10.2	default	ipsec
		192.168.0.2	74	1005	R	installed	10.10.10.100	blue	ipsec
		192.168.0.2	75	1003	C,R	installed	10.10.10.2	private1	ipsec
		192.168.0.2	77	1005	Inv,U	installed	10.10.10.100	blue	ipsec
		192.168.0.2	78	1003	C,R	installed	10.10.10.2	private2	ipsec

Spoke 2#show sdwan system on-demand remote-system

```
SITE-ID SYSTEM-IP
ON-DEMAND    STATUS
 IDLE-TIMEOUT-EXPIRY(sec)
------------------------------------------------------------------------
1      10.10.10.1
 yes         active
53
```

Spoke 2#show sdwan bfd sessions

	SOURCE TLOC	REMOTE TLOC		DST PUBLIC	DST PUBLIC	DETECT

```
SYSTEM IP    SITE ID STATE COLOR        COLOR     SOURCE IP      IP            PORT     ENCAP MULTIPLIE
-------------------------------------------------------------------------------------------------
10.10.10.100  100     up   blue          blue    10.10.10.2      10.100.100.1  12366    ipsec    7

10.10.10.1    2       up   default       default 10.10.10.2      10.11.11.1    12366    ipsec    7
10.10.10.1    2       up   blue          blue    10.10.10.2      10.11.11.1    12366    ipsec    7
```

- 在網輻間停止流量和空閒超時到期後，網輻間的BFD會話消失，按需狀態返回非活動狀態，路由從OMP表中的集線器返回到C、I、R備份路由狀態

<#root>

Spoke 1#show sdwan bfd sessions

```
                              SOURCE TLOC REMOTE TLOC               DST PUBLIC     DST PUBLIC     DETECT
SYSTEM IP     SITE ID STATE   COLOR        COLOR    SOURCE IP      IP              PORT    ENCAP MULTIPL
-------------------------------------------------------------------------------------------------------
10.10.10.100  100      up     blue         blue     10.10.10.1      10.100.100.1   12366   ipsec   7
```

Spoke 1#show sdwan system on-demand remote-system

```
SITE-ID SYSTEM-IP
```

ON-DEMAND STATUS

```
 IDLE-TIMEOUT-EXPIRY(sec)
--------------------------------------------------------------------------
2      10.10.10.2
```

yes

inactive

```
 -
```

Spoke 2#show sdwan bfd sessions

```
                              SOURCE TLOC REMOTE TLOC               DST PUBLIC       DST PUBLIC    DETEC
SYSTEM IP     SITE ID   STATE COLOR         COLOR    SOURCE IP       IP               PORT    ENCAP MULTI
-------------------------------------------------------------------------------------------------------
10.10.10.100  100       up    blue          blue     10.10.10.2      10.100.100.1     12366   ipsec  7
```

Spoke 2#show sdwan system on-demand remote-system

```
SITE-ID SYSTEM-IP
```

ON-DEMAND STATUS

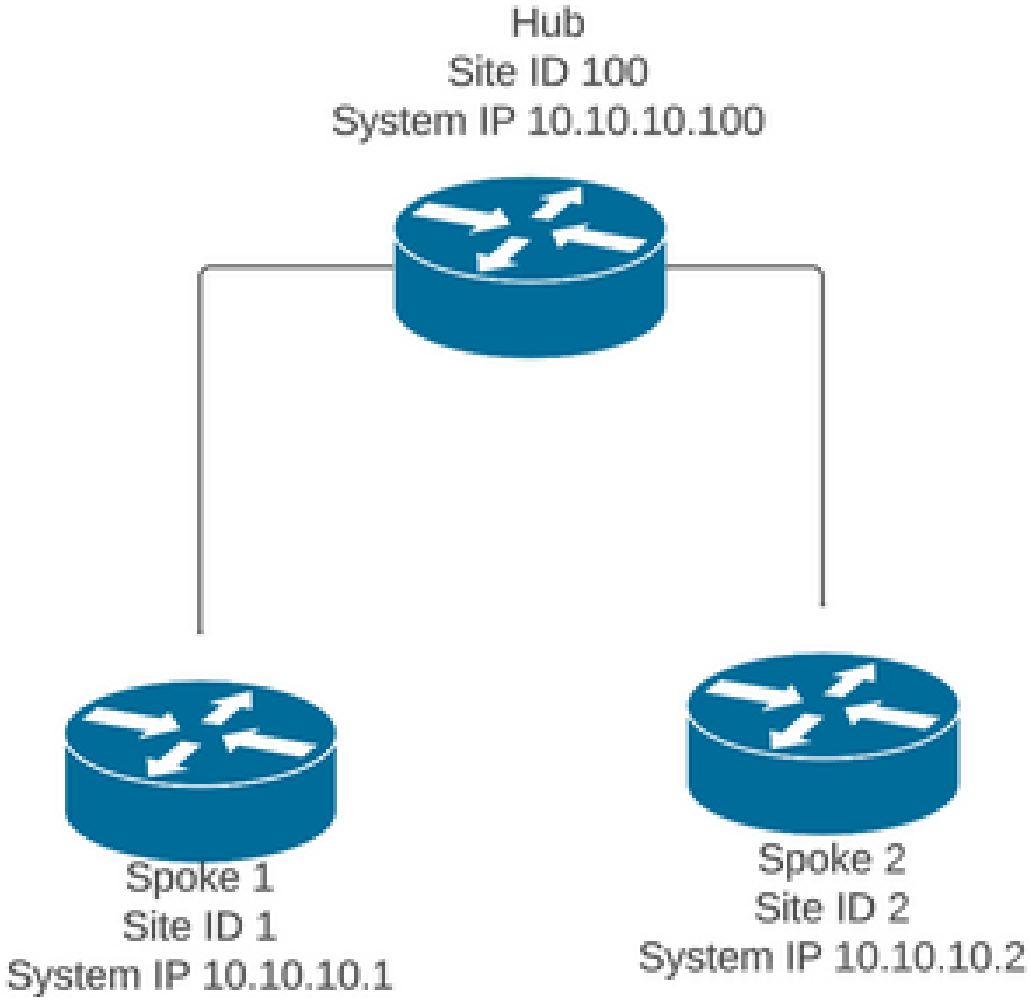
```
 IDLE-TIMEOUT-EXPIRY(sec)
--------------------------------------------------------------------------
1 10.10.10.1
```

yes inactive

```
 -
```

常見問題場景

使用的拓撲



方案1：分支認為透過集線器的備份路徑無效且無法解析

症狀

- 無法訪問Spoke 2中的目標字首，可以看到來自集線器的備份路徑，但會將其視為無效/已解除安裝

<#root>

```
Spoke 1#show sdwan omp routes vpn 10 10.2.2.2/32


Code:
C -> chosen
I -> installed
Red -> redistributed
Rej -> rejected
```

```
L -> looped
R -> resolved
S -> stale
Ext -> extranet
Inv -> invalid
Stg -> staged
IA -> On-demand inactive
U -> TLOC unresolved
BR-R -> border-router reoriginated
TGW-R -> transport-gateway reoriginated

                                    PATH                  ATTRIBUTE
TENANT VPN PREFIX      FROM PEER    ID      LABEL  STATUS TYPE       TLOC IP    COLOR    ENCAP PREFERENC
-------------------------------------------------------------------------------------------------------
0      10   10.2.2.2/32
192.168.0.1  61  1005       Inv,U installed 10.10.10.100 blue    ipsec    -          None     None -
                       192.168.0.1  62  1003       U,IA  installed 10.10.10.2   default ipsec   -
  192.168.0.1  64  1005       Inv,U installed 10.10.10.100 blue    ipsec    -          None     None -
                       192.168.0.1  65  1003       U,IA  installed 10.10.10.2   private1ipsec   -
192.168.0.1  67  1005       Inv,U installed 10.10.10.100 blue    ipsec    -          None     None -
                       192.168.0.1  68  1003       U,IA  installed 10.10.10.2   private2ipsec   -
 192.168.0.2  71  1005       Inv,U installed 10.10.10.100 blue    ipsec    -          None     None -
                       192.168.0.2  72  1003       U,IA  installed 10.10.10.2   default ipsec   -
192.168.0.2  74  1005       Inv,U installed 10.10.10.100 blue    ipsec    -          None     None -
                       192.168.0.2  75  1003       U,IA  installed 10.10.10.2   private1ipsec   -
 192.168.0.2  77  1005       Inv,U installed 10.10.10.100 blue    ipsec    -          None     None -
                       192.168.0.2  78  1003       U,IA  installed 10.10.10.2   private2ipsec   -
```

疑難排解

1. 檢查是否已建立指向分支的集線器BFD會話

<#root>

```
Hub#show sdwan bfd sessions

                          SOURCE TLOC    REMOTE TLOC                    DST PUBLIC DST PUBLIC
SYSTEM IP  SITE ID  STATE COLOR          COLOR.          SOURCE IP      IP         PORT       ENCA
-------------------------------------------------------------------------------------------------
10.10.10.2  2       up   blue           blue            10.10.10.100   10.12.12.2 12366      ipse
10.10.10.1  1       up   default        default         10.10.10.100   10.11.11.1 12366      ipse
```

2. 檢查按需隧道策略，以確認所有站點都已根據其角色（中心或分支）包括在正確的站點清單中

3. 使用命令show sdwan system on-demand確認分支中是否啟用了按需功能並且處於活動狀態

<#root>

```
Spoke 1#show sdwan system on-demand

SITE-ID SYSTEM-IP
ON-DEMAND STATUS
 IDLE-TIMEOUT-CFG(min)
--------------------------------------------------------------------------
1       10.10.10.1
yes       active
 10

Spoke 2#show sdwan system on-demand

SITE-ID SYSTEM-IP
ON-DEMAND STATUS
 IDLE-TIMEOUT-CFG(min)
--------------------------------------------------------------------------
2       10.10.10.2
yes       active
 10
```

4. 確認是否在中心站點中啟用流量工程服務（服務TE）。有用的命令可以是show sdwan run | 包括TE

<#root>

```
hub#show sdwan run | inc TE

!
```

解決方案

- 在這種情況下，中心站點中未啟用服務TE。若要修正，請在集線器端進行設定：

<#root>

```
hub#config-trans
hub(config)# sdwan
```

hub(config-vrf-global)# service TE vrf global

```
hub(config-vrf-global)# commit
```

- 檢查Spoke 1 OMP表中是否已更改，現在對於來自中心10.10.10.100的條目（生成利息流量之前），此路由為C、I、R，而對於來自Spoke 2 10.10.10.2的條目，此路由為C、I、R（生成利息流量時）。此外，使用命令show sdwan system on-demand remote-system <remote system ip>，檢查分支1和分支2之間的BFD會話，以及按需隧道是否已啟用（如果適用）：

<#root>

Before interest traffic

Spoke 1#show sdwan omp routes vpn 10 10.2.2.2/32

```
Generating output, this might take time, please wait ...
Code:
C -> chosen
I -> installed
Red -> redistributed
Rej -> rejected
L -> looped
R -> resolved
S -> stale
Ext -> extranet
Inv -> invalid
Stg -> staged
IA -> On-demand inactive
U -> TLOC unresolved
BR-R -> border-router reoriginated
TGW-R -> transport-gateway reoriginated

AFFINITY
                                    PATH               ATTRIBUTE GROUP
TENANT   VPN PREFIX      FROM PEER ID LABEL STATUS    TYPE     TLOC IP         COLOR      ENCAP PREFEREN
--------------------------------------------------------------------------------------------------------
```

0 10 10.2.2.2/32 192.168.0.1 61 1005 C,I,R installed 10.10.10.100 blue ipsec -

```
                        192.168.0.1 62 1003 I,U,IA   installed 10.10.10.2     default    ipsec   -
                        192.168.0.1 64 1005 C,R      installed 10.10.10.100   blue       ipsec   -
                        192.168.0.1 65 1003 I,U,IA   installed 10.10.10.2     private1   ipsec   -
                        192.168.0.1 67 1005 Inv,U    installed 10.10.10.100   blue       ipsec   -
                        192.168.0.1 68 1003 I,U,IA   installed 10.10.10.2     private2   ipsec   -
                        192.168.0.2 71 1005 C,R      installed 10.10.10.100   blue       ipsec   -
                        192.168.0.2 72 1003 U,IA     installed 10.10.10.2     default    ipsec   -
                        192.168.0.2 74 1005 C,R      installed 10.10.10.100   blue       ipsec   -
                        192.168.0.2 75 1003 U,IA     installed 10.10.10.2     private1   ipsec   -
                        192.168.0.2 77 1005 Inv,U    installed 10.10.10.100   blue       ipsec   -
                        192.168.0.2 78 1003 U,IA     installed 10.10.10.2     private2   ipsec   -
```

While interest traffic

Spoke 1#

show sdwan omp routes vpn 10 10.2.2.2/32

```
Generating output, this might take time, please wait ...
Code:
C -> chosen
I -> installed
Red -> redistributed
Rej -> rejected
L -> looped
R -> resolved
S -> stale
Ext -> extranet
Inv -> invalid
Stg -> staged
IA -> On-demand inactive
U -> TLOC unresolved
BR-R -> border-router reoriginated
TGW-R -> transport-gateway reoriginated

                                                                                                AFFINITY
                                    PATH             ATTRIBUTE                                  GROUP
TENANT VPN PREFIX      FROM PEER    ID LABEL STATUS  TYPE      TLOC IP COLOR ENCAP PREFERENCE NUMBER REGI
-------------------------------------------------------------------------------------------------------
0      10 10.2.2.2/32 192.168.0.1 61 1005 R        installed 10.10.10.100   blue          ipsec - None
```

192.168.0.1 62 1003 C,I,R   installed 10.10.10.2   default   ipsec - None None -

```
                       192.168.0.1 64 1005 R        installed 10.10.10.100   blue          ipsec - None
```

192.168.0.1 65 1003 C,I,R   installed 10.10.10.2   private1   ipsec - None None -

```
                       192.168.0.1 67 1005 Inv,U    installed 10.10.10.100   blue          ipsec - None
```

192.168.0.1 68 1003 C,I,R   installed 10.10.10.2   private2   ipsec - None None -

```
                       192.168.0.2 71 1005 R        installed 10.10.10.100   blue          ipsec - None
                       192.168.0.2 72 1003 C,R      installed 10.10.10.2     default       ipsec - None
```

```
                    192.168.0.2 74 1005 R        installed 10.10.10.100   blue          ipsec - None
                    192.168.0.2 75 1003 C,R      installed 10.10.10.2     private1      ipsec - None
                    192.168.0.2 77 1005 Inv,U    installed 10.10.10.100   blue          ipsec - None
                    192.168.0.2 78 1003 C,R      installed 10.10.10.2     private2      ipsec - None
```

Spoke 1#show sdwan bfd sessions

SYSTEM IP	SITE ID	STATE	SOURCE TLOC COLOR	REMOTE TLOC COLOR	SOURCE IP	DST PUBLIC IP	DST PUBLIC PORT	ENCAP
10.10.10.100	100	up	blue	blue	10.10.10.1	10.100.100.1	12366	ipsec
10.10.10.2	**2**	**up**	**default**	**default**	**10.10.10.1**	**10.12.12.2**	**12366**	**ipsec**
10.10.10.2	**2**	**up**	**blue**	**blue**	**10.10.10.1**	**10.12.12.2**	**12366**	**ipsec**

Spoke 1#show sdwan system on-demand remote-system system-ip 10.10.10.2

SITE-ID SYSTEM-IP

ON-DEMAND STATUS

IDLE-TIMEOUT-EXPIRY(sec)

---

2 10.10.10.2 yes active 41 ------>on-demand tunnel established to spoke 2 10.10.10.2 due of

方案2：分支之間的BFD會話保持開啟

症狀

- 在這種情況下，使用命令show sdwan system on-demand remote-system將遠端Spoke 2終端列於按需遠端終端中，且其狀態為「no on-demand」，即使不傳送任何興趣資料流，並且直接從Spoke 2獲取目標字首，Spoke 1和Spoke 2之間的BFD會話也會保持打開狀態

<#root>

Spoke 1#show sdwan system on-demand remote-system

SITE-ID

SYSTEM-IP ON-DEMAND

STATUS IDLE-TIMEOUT-EXPIRY(sec)

2

10.10.10.2 no

- -

Spoke 1#show sdwan bfd sessions

```
                          SOURCE TLOC REMOTE TLOC           DST PUBLIC   DST PUBLIC       DETECT TX
SYSTEM IP    SITE ID STATE COLOR       COLOR      SOURCE IP  IP           PORT       ENCAP MULTIPLIER I
-------------------------------------------------------------------------------------------------------
10.10.10.100 100     up    blue        blue       10.10.10.1 10.100.100.1 12366      ipsec 7
10.10.10.2   2       up    default     default    10.10.10.1 10.12.12.2   12366      ipsec 7
10.10.10.2   2       up    blue        blue       10.10.10.1 10.12.12.2   12366      ipsec 7
```

Spoke 1#show sdwan omp route vpn 10 10.2.2.2/32

```
Generating output, this might take time, please wait ...
Code:
C -> chosen
I -> installed
Red -> redistributed
Rej -> rejected
L -> looped
R -> resolved
S -> stale
Ext -> extranet
Inv -> invalid
Stg -> staged
IA -> On-demand inactive
U -> TLOC unresolved
BR-R -> border-router reoriginated
TGW-R -> transport-gateway reoriginated

                                    PATH                ATTRIBUTE
TENANT VPN PREFIX          FROM PEER ID LABEL STATUS    TYPE      TLOC IP      COLOR      ENCAP PREFEREN
-------------------------------------------------------------------------------------------------------
0      10 10.2.2.2/32      192.168.0.1 73 1005 R        installed 10.10.10.100 blue       ipsec  -
192.168.0.1 74 1003 C,I,R  installed 10.10.10.2  default  ipsec  -          None       None       -
                           192.168.0.1 76 1005 R        installed 10.10.10.100 blue       ipsec  -
 192.168.0.1 77 1003 C,I,R  installed 10.10.10.2  private1 ipsec  -          None       None       -
                           192.168.0.1 79 1005 Inv,U    installed 10.10.10.100 blue       ipsec  -
192.168.0.1 80 1003 C,I,R  installed 10.10.10.2  private2 ipsec  -          None       None       -
                           192.168.0.2 89 1005 R        installed 10.10.10.100 blue       ipsec  -
                           192.168.0.2 90 1003 C,R      installed 10.10.10.2   default    ipsec  -
                           192.168.0.2 92 1005 R        installed 10.10.10.100 blue       ipsec  -
                           192.168.0.2 93 1003 C,R      installed 10.10.10.2   private1   ipsec  -
                           192.168.0.2 95 1005 Inv,U    installed 10.10.10.100 blue       ipsec  -
                           192.168.0.2 96 1003 C,R      installed 10.10.10.2   private2   ipsec  -
```

疑難排解

1. 檢查按需隧道策略，以確認所有站點都已根據其角色（中心或分支）包括在正確的站點清單中

```
viptela-policy:policy
 control-policy ondemand
    sequence 1
     match route
      site-list Spokes
      prefix-list _AnyIpv4PrefixList
     !
     action accept
      set
       tloc-action backup
       tloc-list hub
      !
     !
    !
  default-action accept
 !
 lists
  site-list Spokes
   site-id 1-2
  !
  tloc-list hub
   tloc 10.10.10.100 color blue encap ipsec
   tloc 10.10.10.100 color default encap ipsec
   tloc 10.10.10.100 color private1 encap ipsec
   tloc 10.10.10.100 color private2 encap ipsec
  !
  prefix-list _AnyIpv4PrefixList
   ip-prefix 0.0.0.0/0 le 32
  !
 !
!
apply-policy
 site-list Spokes
  control-policy ondemand out
 !
!
```

2. 使用show sdwan run命令檢查按需是否啟用 | inc在分支中按需提供和TE在集線器中透過命令show sdwan run啟用 | 包括TE

<#root>

```
Spoke 1#show sdwan run | inc on-demand
on-demand enable
on-demand idle-timeout 10
```

```
Spoke 2#show sdwan run | inc on-demand
Spoke 2#

Hub#show sdwan run | inc TE
service TE vrf global
```

解決方案

- 在這種情況下，在Spoke 2中未啟用隨選功能。若要修正，請在Spoke 2端進行設定

<#root>

```
Spoke 2#config-trans
Spoke 2(config)# system

Spoke 2(config-vrf-global)# on-demand enable
Spoke 2(config-vrf-global)# on-demand idle-timeout 10


Spoke 2(config-vrf-global)# commit
```

- 檢查Spoke 1 now Spoke 2中是否顯示為on-demand yes，並且OMP表已更改，並且現在對於來自中心10.10.10.100（生成興趣流量之前）而不是直接來自Spoke 2的條目，此路由為C、I、R

<#root>

```
Spoke 1#show sdwan system on-demand remote-system
SITE-ID SYSTEM-IP ON-DEMAND STATUS IDLE-TIMEOUT-EXPIRY(sec)
------------------------------------------------------------------------------
2       10.10.10.2 yes inactive -

Spoke 1#show sdwan omp routes vpn 10 10.2.2.2/32

Generating output, this might take time, please wait ...
Code:
C -> chosen
I -> installed
Red -> redistributed
Rej -> rejected
L -> looped
R -> resolved
S -> stale
Ext -> extranet
Inv -> invalid
Stg -> staged
IA -> On-demand inactive
U -> TLOC unresolved
BR-R -> border-router reoriginated
```

```
TGW-R -> transport-gateway reoriginated

AFFINITY
        PATH ATTRIBUTE GROUP
TENANT VPN PREFIX       FROM PEER   ID LABEL STATUS TYPE     TLOC IP      COLOR       ENCAP PREFERENCE
-------------------------------------------------------------------------------------------------------

0      10  10.2.2.2/32  192.168.0.1 61 1005 C,I,R  installed 10.10.10.100  blue       ipsec      -


                       192.168.0.1 62 1003 I,U,IA installed 10.10.10.2    default    ipsec      -
                       192.168.0.1 64 1005 C,R    installed 10.10.10.100  blue       ipsec      -
                       192.168.0.1 65 1003 I,U,IA installed 10.10.10.2    private1   ipsec      -
                       192.168.0.1 67 1005 Inv,U  installed 10.10.10.100  blue       ipsec      -
                       192.168.0.1 68 1003 I,U,IA installed 10.10.10.2    private2   ipsec      -
                       192.168.0.2 71 1005 C,R    installed 10.10.10.100  blue       ipsec      -
                       192.168.0.2 72 1003 U,IA   installed 10.10.10.2    default    ipsec      -
                       192.168.0.2 74 1005 C,R    installed 10.10.10.100  blue       ipsec      -
                       192.168.0.2 75 1003 U,IA   installed 10.10.10.2    private1   ipsec      -
                       192.168.0.2 77 1005 Inv,U  installed 10.10.10.100  blue       ipsec      -
                       192.168.0.2 78 1003 U,IA   installed 10.10.10.2    private2   ipsec      -
```

- 生成利息流量時，來自Spoke 2 10.10.10.2條目的流量將獲得C、I、R。此外，使用命令show sdwan system on-demand remote-system <remote system ip>，檢查Spoke 1和Spoke 2之間的BFD會話是否已啟用，並檢查按需隧道是否已啟用

<#root>

Spoke 1#

show sdwan omp routes vpn 10 10.2.2.2/32

```
Generating output, this might take time, please wait ...
Code:
C -> chosen
I -> installed
Red -> redistributed
Rej -> rejected
L -> looped
R -> resolved
S -> stale
Ext -> extranet
Inv -> invalid
Stg -> staged
IA -> On-demand inactive
U -> TLOC unresolved
BR-R -> border-router reoriginated
TGW-R -> transport-gateway reoriginated

                                          PATH              ATTRIBUTE
TENANT  VPN        PREFIX          FROM PEER   ID LABEL STATUS    TYPE     TLOC IP      COLOR ENCAP PRE
-------------------------------------------------------------------------------------------------------
0       10         10.2.2.2/32     192.168.0.1 61 1005 R         installed 10.10.10.100  blue     ipsec
                                   192.168.0.1 62 1003 C,I,R     installed 10.10.10.2    default  ipsec
```

```
                                192.168.0.1 64 1005 R         installed 10.10.10.100  blue     ipsec
                                192.168.0.1 65 1003 C,I,R     installed 10.10.10.2    private1 ipsec

                                192.168.0.1 67 1005 Inv,U     installed 10.10.10.100  blue     ipsec
                                192.168.0.1 68 1003 C,I,R     installed 10.10.10.2    private2 ipsec

                                192.168.0.2 71 1005 R         installed 10.10.10.100  blue     ipsec
                                192.168.0.2 72 1003 C,R       installed 10.10.10.2    default  ipsec
                                192.168.0.2 74 1005 R         installed 10.10.10.100  blue     ipsec
                                192.168.0.2 75 1003 C,R       installed 10.10.10.2    private1 ipsec
                                192.168.0.2 77 1005 Inv,U     installed 10.10.10.100  blue     ipsec
                                192.168.0.2 78 1003 C,R       installed 10.10.10.2    private2 ipsec
```

Spoke 1#show sdwan bfd sessions

```
                         SOURCE TLOC REMOTE TLOC             DST PUBLIC  DST PUBLIC          DETECT
SYSTEM IP SITE ID STATE COLOR       COLOR       SOURCE IP   IP          PORT         ENCAP MULTIPLIER I
-------------------------------------------------------------------------------------------------------
10.10.10.100 100  up blue          blue         10.10.10.1 10.100.100.1 12366       ipsec     7
10.10.10.2   2    up default       default      10.10.10.1 10.12.12.2   12366       ipsec     7
10.10.10.2   2    up blue          blue         10.10.10.1 10.12.12.2   12366       ipsec     7
```

Spoke 1#show sdwan system on-demand remote-system system-ip 10.10.10.2

```
SITE-ID SYSTEM-IP
ON-DEMAND STATUS
 IDLE-TIMEOUT-EXPIRY(sec)
-------------------------------------------------------------------------
2       10.10.10.2 yes      active   41 ------>on-demand tunnel established to Spoke 2 10.10.10.2 due c
```

方案3：網輻中沒有租用或安裝任何備用路由

症狀

- 在這種情況下，在OMP表中沒有源自Spoke 2的字首10.2.2.2/32的備份路由，只看到按需非活動條目。已確認分支中的按需配置和集線器中的TE

<#root>

Spoke 1#show sdwan omp route vpn 10 10.2.2.2/32

```
Generating output, this might take time, please wait ...
Code:
C -> chosen
I -> installed
Red -> redistributed
Rej -> rejected
L -> looped
R -> resolved
S -> stale
Ext -> extranet
Inv -> invalid
Stg -> staged
IA -> On-demand inactive
U -> TLOC unresolved
BR-R -> border-router reoriginated
TGW-R -> transport-gateway reoriginated

AFFINITY
PATH ATTRIBUTE GROUP
TENANT VPN      PREFIX     FROM PEER   ID LABEL STATUS TYPE     TLOC IP   COLOR   ENCAP PREFERENCE NUMB
-------------------------------------------------------------------------------------------------------
0      10      10.2.2.2/32 192.168.0.1 108 1003

U,IA

 installed 10.10.10.2 default  ipsec -             None  None -
                           192.168.0.1 113 1003

U,IA

 installed 10.10.10.2 private1 ipsec -             None  None -
                           192.168.0.1 141 1003

U,IA

 installed 10.10.10.2 private2 ipsec -             None  None -
                           192.168.0.2 112 1003

U,IA

 installed 10.10.10.2 default  ipsec -             None  None -
                           192.168.0.2 117 1003

U,IA

 installed 10.10.10.2 private1 ipsec -             None  None -
                           192.168.0.2 144 1003

U,IA

 installed 10.10.10.2 private2 ipsec -             None  None -
```

```
Spoke 1#show sdwan run | inc on-demand
on-demand enable
on-demand idle-timeout 10
```

```
Spoke 2#show sdwan run | inc on-demand
on-demand enable
on-demand idle-timeout 10
```

```
Hub#show sdwan run | inc TE
service TE vrf global
```

疑難排解

- 檢查按需集中策略，並確認所有分支是否都包含在正確的站點清單中

<#root>

```
viptela-policy:policy
 control-policy ondemand
    sequence 1
     match route
      site-list Spokes
      prefix-list _AnyIpv4PrefixList
     !
     action accept
      set
       tloc-action backup
       tloc-list hub
      !
     !
    !
  default-action accept
 !
 lists


site-list Spokes
   site-id 1


  !
  tloc-list hub
   tloc 10.10.10.100 color blue encap ipsec
   tloc 10.10.10.100 color default encap ipsec
   tloc 10.10.10.100 color private1 encap ipsec
   tloc 10.10.10.100 color private2 encap ipsec
  !
  prefix-list _AnyIpv4PrefixList
   ip-prefix 0.0.0.0/0 le 32
  !
 !
!
apply-policy
 site-list Spokes
  control-policy ondemand out
 !
```

解決方案

- 請注意，策略中的站點清單分支中缺少Spoke 2站點ID 2。將其包含在站點清單中後，備份路徑將正確安裝，當傳送關注流量時，會啟動按需隧道和分支之間的BFD會話。

<#root>

Spokes site list from policy before

lists

site-list Spokes

site-id 1

!

Spokes site list from policy after

lists

site-list Spokes

site-id 1-2

!

Spoke 1#show sdwan omp routes vpn 10 10.2.2.2/32

Generating output, this might take time, please wait ...
Code:
C -> chosen
I -> installed
Red -> redistributed
Rej -> rejected
L -> looped
R -> resolved
S -> stale
Ext -> extranet
Inv -> invalid
Stg -> staged
IA -> On-demand inactive
U -> TLOC unresolved
BR-R -> border-router reoriginated
TGW-R -> transport-gateway reoriginated

AFFINITY
PATH ATTRIBUTE GROUP
TENANT VPN PREFIX FROM PEER ID LABEL STATUS TYPE TLOC IP COLOR ENCAP PREFERENC
---

0 10 10.2.2.2/32 192.168.0.1 61 1005 C,I,R installed 10.10.10.100 blue ipsec -

192.168.0.1 62 1003 I,U,IA installed 10.10.10.2 default ipsec -
192.168.0.1 64 1005 C,R installed 10.10.10.100 blue ipsec -
192.168.0.1 65 1003 I,U,IA installed 10.10.10.2 private1 ipsec -

```
                          192.168.0.1 67 1005 Inv,U   installed 10.10.10.100 blue     ipsec    -
                          192.168.0.1 68 1003 I,U,IA  installed 10.10.10.2   private2 ipsec    -
                          192.168.0.2 71 1005 C,R     installed 10.10.10.100 blue     ipsec    -
                          192.168.0.2 72 1003 U,IA    installed 10.10.10.2   default  ipsec    -
                          192.168.0.2 74 1005 C,R     installed 10.10.10.100 blue     ipsec    -
                          192.168.0.2 75 1003 U,IA    installed 10.10.10.2   private1 ipsec    -
                          192.168.0.2 77 1005 Inv,U   installed 10.10.10.100 blue     ipsec    -
                          192.168.0.2 78 1003 U,IA    installed 10.10.10.2   private2 ipsec    -
```

Spoke 1#show sdwan bfd sessions

```
SOURCE                      TLOC REMOTE TLOC DST PUBLIC     DST PUBLIC              DETECT        TX
SYSTEM IP    SITE ID STATE COLOR       COLOR    SOURCE IP  IP           PORT ENCAP MULTIPLIER INTERVAL(
-------------------------------------------------------------------------------------------------------
10.10.10.100   100   up    blue          blue    10.10.10.1 10.100.100.1 12366 ipsec  7          1000
10.10.10.2       2    up    default       default 10.10.10.1 10.12.12.2   12366 ipsec  7          1000


10.10.10.2       2    up    blue          blue    10.10.10.1 10.12.12.2   12366 ipsec  7          1000
```

Spoke 1#show sdwan system on-demand remote-system system-ip 10.10.10.2

```
SITE-ID SYSTEM-IP
ON-DEMAND STATUS
 IDLE-TIMEOUT-EXPIRY(sec)
-------------------------------------------------------------------------
2       10.10.10.2 yes      active    56 ------>on-demand tunnel established to Spoke 2 10.10.10.2 due c
```

有用的命令

- show sdwan system on-demand
- show sdwan system on-demand remote-system
- show sdwan system on-demand remote-system system-ip <system ip>
- show sdwan run | 包括按需提供
- show sdwan run | 包括TE
- show sdwan ompo routes vpn <vpn number>

關於此翻譯

思科已使用電腦和人工技術翻譯本文件，讓全世界的使用者能夠以自己的語言理解支援內容。請注意，即使是最佳機器翻譯，也不如專業譯者翻譯的內容準確。Cisco Systems, Inc. 對這些翻譯的準確度概不負責，並建議一律查看原始英文文件（提供連結）。